

Influence of Variety & Seeding Rate on Alfalfa Stem Firmness

Purpose: To determine if alfalfa stem fineness (diameter) for hay can be improved by variety selection or seeding rate.

Background:

Hay producers want alfalfa that is fine stemmed, rather than course stemmed. This is thought to minimize “sorting”, and improve palatability, forage quality (digestibility) and marketability. Stem fineness is more important when alfalfa is harvested as dry hay rather than haylage. Hay producers are likely willing to sacrifice some yield potential for an improvement in stem fineness, whereas haylage producers are not. Are hay producers inadvertently selecting unsuitable varieties? There are anecdotal differences between varieties with regards to stem fineness. There is also anecdotal evidence that stem fineness can be improved by a high seeding rate, although this effect may not last past the first year.

While the historical OFCC (Ontario Forage Crops Committee) registration trials included new and experimental varieties compared to a check, this is a side-by-side performance trial where we will get to see the commercially available varieties together in one plot. This provides an excellent site for Soil & Crop Tours to discuss variety selection, as well as alfalfa management. Information gained from the project will be shared with the U of G, Ontario Forage Crops Committee, and the Ontario Forage Council.

Methods:

Trial #1 – Variety

Side-by-side alfalfa performance variety (yield) trials were seeded in May 2005 near Enniskillen by the University of Guelph. However, without the Ontario Soil and Crop Improvement Association Regional Grant, there would have been no funding to harvest these plots and obtain the data. The trial consists of 49 varieties, in 1 X 6 m plots that are replicated 4 times. In 2006, 2007 & 2008, these plots will be harvested and evaluated for yield and stem diameter.

Plot Harvest

East-Central S&C uses the Centrailia plot harvester and is responsible for the transportation and insurance of the machine for the 3 harvests each year. A transport company is used to transport the machine to the site and back. Harvest timing targets the early-flower stage.

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Stem Diameter

Two harvests of 1 square foot are made of each variety. The stems are “staged”, and the number of stems/stage counted. These are put in paper bags, dried, and weighed to determine “mean stage by weight”. Stems at “stage 4” (early flower) are to be measured for stem diameter between the first internodes from the base, using electronic calipers.

Yield Measurements

The entire plot is then harvested using the plot harvester, with the sample weights being added back in.

Preliminary Results

Varieties have been ranked according to a “maturity index” and a “diameter index”. While there appears to be a relationship between the two, maturity does not account for all the differences between varieties in stem diameter. Further analysis of the data will be done. Data will not be published until we have more than one year of data.

Trial #2 – Seeding Rate

Seeding preparation was done by farm co-operator. The Elora forage plot planter was used. It was transported to the site and back by East-Central S&C.

Varieties & Seeding Rates

Five varieties were planted – some that are anecdotally known as “fine stemmed” and some that are known as “course stemmed”. Seeding rates were 6, 12, 18, 24 and 30 kg/ha. The plots were replicated 4 times, similar to Trial #1.

Results:

Yield data was added to composite index data that is published on the 2007 OFCC Forage Variety brochure.

www.plant.uoguelph.ca/performance_recommendations/ofcc/pdf/ofcc_performance.pdf

Stem diameter and maturity index data will be published when analysis is finalized.

Summary:

Year 1 of this 3 year trial is complete.

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